

REMARKS

Claims 1, 3, 5-7, 10, 11, 13-18, 21-23, 25-31, 33, and 34-38 are pending in this application. Claims 1 and 21 have been amended. New Claims 35-38 have been added. Support for the amendments and new claims is found in the specification and claims as filed.

Claim Rejections - 35 U.S.C. § 103(a) – Karbachsch in view of Miller

Claims 1, 3, 5-7, 10, 11, 13-18, 21-23, 25-31, 33, and 34 have been rejected under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 4,983,288 (hereinafter “Karbachsch”) in view of U.S. Patent No. 4,906,371 (hereinafter “Miller”).

It is well settled that the Examiner “bears the initial burden of presenting a *prima facie* case of unpatentability...” *In re Sullivan*, 498 F.3d 1345 (Fed. Cir. 2007). Until the Examiner has established a *prima facie* case of obviousness, the Applicant need not present arguments or evidence of non-obviousness. To establish a *prima facie* case of obviousness, the Examiner must establish at least three elements. First, the prior art reference (or references when combined) must teach or suggest all of the claim limitations: “All words in a claim must be considered in judging the patentability of that claim against the prior art.” *In re Wilson*, 424 F.2d 1382, 165 U.S.P.Q. 494, 496 (CCPA 1970); *see also* M.P.E.P. § 2143.03. Second, there must be a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091 (Fed. Cir. 1986); *see also* M.P.E.P. § 2143.02. And finally, the Examiner must articulate some reason to modify or combine the cited references that renders the claim obvious. Merely establishing that the claimed elements can be found in the prior art is not sufficient to establish a *prima facie* case of obviousness:

As is clear from cases such as *Adams*, a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007) (emphasis added).

Instead, the Court has made clear that the Examiner must establish a reason one of skill in the art would have combined the elements of the prior art, and that such reason must be more than a conclusory statement that it would have been obvious.

Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent

reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit. *See In re Kahn*, 441 F.3d 977, 988 (C.A.Fed.2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”). *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740-1741 (2007).

Superiority of a property shared with the prior art is evidence of nonobviousness. *See* M.P.E.P. § 716.02(a).

Applicants respectfully submit that the pending claims as amended are not obvious under 35 U.S.C. § 103(a) for the reasons detailed below.

Pending Claim 1 and its dependent Claims 3, 5-7, 11, 13, 18, 22, 23, 26, and 31

Pending independent Claim 1 as amended recites a filter laminate comprising, *inter alia*, a “first membrane, wherein said first membrane is a microporous or ultraporous membrane, said first membrane having a first surface and a second surface, each of said surfaces comprising pores, and a support region between said first surface and said second surface comprising flow channels connecting said pores of said first surface with said pores of said second surface, said first membrane comprising an asymmetric region and an isotropic region, wherein said asymmetric region comprises flow channels that gradually increase in diameter from a point in said support region to said second surface, and wherein said isotropic region comprises flow channels that are substantially constant in diameter from said point in said support region to said first surface.” Such a pore morphology is commonly referred to as “funnel-with-a-neck” morphology.

Neither Karbachsch nor Miller teaches or suggests a filter laminate incorporating a membrane having the recited pore morphology. As discussed in the Declaration of I-fan Wang submitted with Applicants’ amendment dated November 14, 2007, a membrane having a funnel-with-a-neck structure offers advantages over both a pure isotropic structure and a pure asymmetric structure, as disclosed in Karbachsch and Miller. Membranes having a funnel-with-a-neck structure exhibit superior performance in certain aspects when compared to membranes having other pore morphologies (e.g., lateral wicking times, plasma transfer rates, and filtration capacities).

Because the combination of Karbachsch and Miller fails to teach or suggest a filter laminate incorporating a membrane having a "funnel-with-a-neck" morphology – a morphology that offers advantages over the purely asymmetric and purely isotropic membrane morphologies disclosed in Karbachsch and Miller – Applicants submit that pending Claim 1 and its corresponding dependent claims are nonobvious and respectfully request that the rejection be withdrawn.

Pending Claim 21 and its dependent Claims 25, 28-30, and 33

Pending Claim 21 recites a filter laminate comprising "a plurality of discrete layers of material, wherein each layer is adjacent at least one other layer, said plurality of discrete layers comprising: a first membrane, wherein said first membrane is an asymmetric membrane having a skin surface and an open surface, wherein pores of the open surface are larger than pores of the skin surface, and wherein said asymmetric region comprises flow channels that gradually increase in diameter from said skin surface to said open surface; a second membrane, wherein said second membrane is an asymmetric membrane having a skin surface and an open surface, wherein pores of the open surface are larger than pores of the skin surface, and wherein said asymmetric region comprises flow channels that gradually increase in diameter from said skin surface to said open surface; and a bond between each of said adjacent layers, wherein the skin surface of the first membrane is bonded to the skin surface of the second membrane, wherein the filter laminate has a higher bubble point than either the first membrane or the second membrane, and wherein the filter laminate has a greater integrity than a combination wherein the skin surface of the first membrane and the skin surface of the second membrane are adjacent to each other but not bonded to each other, wherein the filter laminate has a flow rate therethrough such that the filter laminate is configured for separation by filtration."

Neither Karbachsch and Miller teaches or suggests a laminate comprising two asymmetric membranes, each having flow channels that gradually increase in diameter from the skin surface to the open surface, in a skin-to-skin bonded configuration (the skin surface of the membrane defined as the surface with smaller pore sizes), as recited in Claim 21, much less identify any advantages to such a configuration. As discussed in the application as filed at page 10, ll. 11-21, a skin-to-skin configuration dramatically increases the bubble point of the resulting filter laminate above that of either of the single layers, due to the fact that the probability of

lining up two large pores (which are responsible for the bubble point) is significantly reduced because most of the pores are "average" size, and probability greatly favors the situation where a large pore is confronted by numerous smaller pores. This results in greatly improved membrane integrity and, therefore, improved bacterial and particle retention. Simply placing two asymmetric membranes together, skin-to-skin, without bonding them, will not necessarily reduce the bubble point because the test air that flows through the top layer can travel laterally until it finds a larger pore in the bottom layer.

Because the combination of Karbachsch and Miller fails to teach or suggest a filter laminate having a skin-to-skin bonding configuration between two asymmetric membranes as recited in Claim 21 – a configuration that offers advantages in terms of bubble point – Applicants submit that pending Claim 21 and its corresponding dependent claims are nonobvious and respectfully request that the rejection be withdrawn.

Comments on Examiner's Answer to Applicants' Arguments

In regard to Claim 1, Applicants have revised the description of the first membrane such that it reads only on a membrane having a funnel with a neck structure (i.e., a membrane "comprising an asymmetric region and an isotropic region, wherein said asymmetric region comprises flow channels that gradually increase in diameter from a point in said support region to said second surface, and wherein said isotropic region comprises flow channels that are substantially constant in diameter from said point in said support region to said first surface"). The flow channels are specified to connect the pores of the first surface of the membrane with the pores of the second surface of the membrane, with the transition between the asymmetric and isotropic regions occurring at "a point in said support region."

In regard to Claim 21, Applicants have clarified the definitions of the asymmetric membranes. Applicants note that the skin surface of the asymmetric membranes is defined in the claims as the surface having the smaller pores of the two surfaces. This definition is consistent with usage in the specification as filed (in an asymmetric membrane, the skin surface has minimum pore sizes, while the open surface has larger pore sizes). Skin-to-skin bonding between asymmetric membranes as defined in the claims requires that the surfaces with smaller pores be bonded together. This definition does not encompass bonding between open surfaces (surfaces with larger pores), or bonding between a skin surface and an open surface. Asymmetric

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membranes bonded skin-to-skin, as such bonding is defined in the claims, are neither taught nor suggested in Karbachsch and Miller.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, the Applicants are not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. The Applicants reserve the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that the Applicants have made any disclaimers or disavowals of any subject matter supported by the present application.

Conclusion

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is in condition for allowance. Should the Examiner have any remaining concerns that might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number below.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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